

ABSTRACT OF THE DISCLOSURE

An optical transmit module. In one aspect of the present invention, an optical beam is generated with a gain medium disposed in a semiconductor substrate. A tunable Bragg grating also disposed in the semiconductor substrate may be optically coupled to the gain  
5 medium to tune an output wavelength of the optical beam. The semiconductor substrate further includes an optical modulator optically coupled to receive the optical beam. The optical modulator is coupled to modulate the optical beam in response to a modulation signal.